

10/606660

In the Claims:

Please amend the claims as follows:

1. (Original) A micromachined device, characterized by:
a semiconductor body;
an intermediate layer on top of said semiconductor body;
a substrate of semiconductor material, on top of said intermediate layer;
a cavity extending in said intermediate layer, said cavity delimiting laterally bottom fixed regions and being delimited at the top by said substrate and at the bottom by said semiconductor body;
an oscillating element formed in said substrate above said cavity;
trenches extending through said substrate, said trenches insulating said oscillating element from top fixed regions;
said oscillating element comprising an oscillating platform and mobile electrodes extending towards said top fixed regions;
said bottom fixed regions forming fixed electrodes that extend in said intermediate layer towards the inside of said cavity and are staggered with respect to said mobile electrodes.
2. (Original) The device according to claim 1, further comprising a bonding structure, arranged between said semiconductor body and said intermediate layer.
3. (Original) The device according to claim 1, further comprising an insulating layer arranged between said intermediate layer and said substrate, electrical-connection regions extending through said insulating layer between said top fixed regions and said bottom fixed regions.
4. (Original) The device according to claim 3, wherein said substrate has a top surface, and wherein metal contacts are formed above said top surface in direct electrical contact with said top fixed regions and said oscillating element.
5. (Original) The device according to claim 1, wherein said oscillating element forms a mirror element of an optical switch further comprising a pair of

anchoring regions and a pair of supporting arms extending between each anchoring region and said platform.

6. (Original) The device according to claim 5, wherein said mobile electrodes extend from said platform towards said top fixed regions.

7. (Original) The device according to claim 2, wherein said bonding structure is formed by an insulating material layer arranged between said semiconductor body and said intermediate layer.

8. (Original) The device according to claim 2, wherein said semiconductor body houses electronic components and is coated with an insulating material layer, and said bonding structure comprises electrically conductive regions arranged on top of said insulating material layer, said electrically conductive regions being in direct electrical contact with at least said bottom fixed regions and with electrical-connection regions formed in said insulating material layer for electrical connection between said electronic components and at least said bottom fixed regions.

Claims 9-20 are cancelled.

21. (Currently Amended) A micromachined device, comprising:
a first substrate;

an intermediate layer adjacent the ~~semiconductor~~ first substrate, the intermediate layer having first and second fixed control regions formed spaced apart from one another in the intermediate layer to define a cavity between the regions, each region having fixed control elements extending into the cavity along at least a portion of an edge defining the cavity;

a second substrate adjacent the intermediate layer, the second substrate including,

a movable element formed adjacent the cavity and having movable control elements extending into the cavity, the movable control elements being staggered relative to the fixed control elements, and

third and fourth fixed control regions formed separate from the movable element, the third and fourth fixed control regions being coupled to the first and second fixed control regions, respectively, in the intermediate layer.

22. (Original) The micromachined device of claim 21 wherein the movable element comprises:

an oscillating platform having mobile electrodes formed along a first edge that extend toward the third fixed control region and formed along a second edge that extend toward the fourth fixed control region; and

first and second arms formed along third and fourth edges of the platform; and first and second anchor regions coupled to the first and second arms, respectively.

23. (Original) The micromachined device of claim 21 further comprising at least one metal contact formed on each of the third and fourth fixed control regions.

24. (Original) The micromachined device of claim 21 further comprising a bonding structure formed between the first substrate and the intermediate layer.

25. (Original) The micromachined device of claim 24 wherein the bonding structure comprises a bonding oxide layer.

26. (Original) The micromachined device of claim 24 wherein the bonding structure comprises:

an oxide layer formed on the first substrate; and bonding regions formed on the oxide layer.

27. (Original) The micromachined device of claim 26 further comprising: active regions formed in the first substrate, the active regions having an opposite conductivity type of a conductivity type of the first substrate; and electrical contact regions formed in the oxide layer, each electrical contact region interconnecting a respective bonding region and active region.

28. (Currently Amended) An electronic system including a micromachined device, the micromachined device comprising:

a first substrate;

an intermediate layer adjacent the ~~semiconductor~~ first substrate, the intermediate layer having first and second fixed control regions formed spaced apart from one another in the intermediate layer to define a cavity between the regions,

each region having fixed control elements extending into the cavity along at least a portion of an edge defining the cavity;

a second substrate adjacent the intermediate layer, the second substrate including,

a movable element formed adjacent the cavity and having movable control elements extending into the cavity, the movable control elements being staggered relative to the fixed control elements, and

third and fourth fixed control regions formed separate from the oscillating element, the third and fourth fixed control regions being coupled to the first and second fixed control regions, respectively, in the intermediate layer.

29. (Original) The system of claim 28 wherein the system comprises an optical system.

Claims 30-34 are cancelled

35. (New) A micromachined device, comprising:

a first substrate;

an intermediate layer adjacent the first substrate, the intermediate layer having fixed electrode regions formed in the layer with these electrode regions being spaced apart in the intermediate layer to define a cavity among the regions, the electrode regions including portions extending into the cavity; and

a second substrate adjacent the intermediate layer, the second substrate including movable electrode regions formed in the second substrate, the movable electrode regions including portions extending into the cavity with the portions being offset relative to the portions of the fixed electrode regions.

36. (New) The micromachined device of claim 35 wherein the first substrate bounds the cavity along a lower edge and wherein the second substrate bounds the cavity along an upper edge.

37. (New) A device, comprising:

a first substrate;

an intermediate layer adjacent the first substrate, the intermediate layer having fixed electrodes formed in the layer with these electrodes being spaced apart in the intermediate layer to define a cavity among the electrodes; and

a second substrate adjacent the intermediate layer, the second substrate including movable electrodes formed in the second substrate, wherein the movable electrodes are not positioned opposing the fixed electrodes in an at rest condition of the device.

38. (New) The device of claim 37 wherein the fixed electrodes further comprise portions extending into the cavity and wherein the movable electrodes further include portion extending into the cavity and being offset relative to the portions of the fixed electrode regions.

39. (New) The device of claim 37 wherein the first substrate bounds the cavity along a lower edge and wherein the second substrate bounds the cavity along an upper edge.